

**Microsemi Corp.**

The diode experts

SANTA ANA, CA

SCOTTSDALE, AZ

For more information call:  
(602) 941-6300

**SMB\* SERIES**  
**5.0 thru 170.0**  
**Volts**  
**600 WATTS**

**FEATURES**

- LOW PROFILE PACKAGE FOR SURFACE MOUNTING
- VOLTAGE RANGE: 5.0 TO 170 VOLTS
- 600 WATTS PEAK POWER
- UNIDIRECTIONAL AND BIDIRECTIONAL
- LOW INDUCTANCE

This series of TAZ (transient absorption zeners), available in small outline surface mountable packages, is designed to optimize board space. Packaged for use with surface mount technology automated assembly equipment, these parts can be placed on printed circuit boards and ceramic substrates to protect sensitive components from transient voltage damage.

The SMB series, rated for 600 watts, during a one millisecond pulse, can be used to protect sensitive circuits against transients induced by lightning and inductive load switching. With a response time of  $1 \times 10^{-12}$  seconds (theoretical) they are also effective against electrostatic discharge and NEMP.

**MAXIMUM RATINGS**

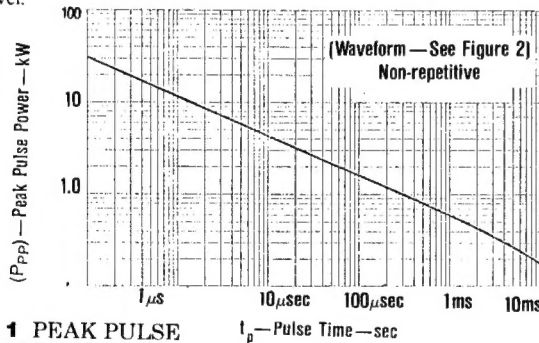
600 watts of Peak Power dissipation ( $10 \times 1000 \mu\text{s}$ )

$t_{\text{clamping}}$  (0 volts to  $V_{\text{BR}}$  min): less than  $1 \times 10^{-12}$  seconds (theoretical)

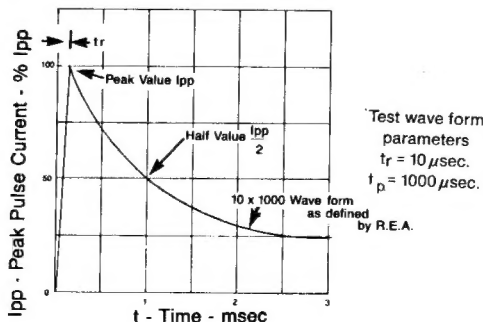
Forward surge rating: 50 Amps, 1/120 sec @ 25°C (Excluding Bidirectional)

Operating and Storage Temperature: -65° to +175°C

**NOTE:** A TAZ is normally selected according to the reverse "Stand Off Voltage" ( $V_{\text{RM}}$ ) which should be equal to or greater than the DC or continuous peak operating voltage level.



**FIGURE 1** PEAK PULSE POWER VS PULSE TIME



**FIGURE 2**  
PULSE WAVEFORM

**UNI- and BI-DIRECTIONAL**  
**SURFACE MOUNT**



DO-215AA



DO-214AA

See Page 3-39 for  
Package Dimensions.

\* **NOTE:** All SMB series are equivalent to prior SMS package identifications.

**MECHANICAL**  
**CHARACTERISTICS**

CASE: Molded Surface Mountable.

TERMINALS: Gull-wing or C-bend (modified J-bend) leads, tin lead plated.

POLARITY: Cathode indicated by band. No marking on bidirectional devices.

PACKAGING: Standard 12 mm tape (see EIA Std. RS-481).

THERMAL RESISTANCE: 25°C/W (typical) junction to lead (tab) at mounting plane.

# SMB 5.0 thru 170 Volts

## ELECTRICAL CHARACTERISTICS @ 25°C

MICROSEMI CORP. PART NUMBER		REVERSE STAND-OFF VOLTAGE (See Note) $V_{WM}$ VOLTS	BREAKDOWN VOLTAGE $V_{BR}$ @ $I_T$ VOLTS		MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$ VOLTS	PEAK PULSE CURRENT (See Fig. 2) $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE @ $V_{WM}$ $I_D$ $\mu A$
GULL-WING LEAD	MODIFIED "J" BEND LEAD		MIN.	MAX.			
SMBG5.0	SMBJ5.0	5.0	6.40 - 7.30	10	9.6	62.5	800
SMBG5.0A	SMBJ5.0A	5.0	6.40 - 7.00	10	9.2	65.2	800
SMBG6.0	SMBJ6.0	6.0	6.67 - 8.15	10	11.4	52.6	800
SMBG6.0A	SMBJ6.0A	6.0	6.67 - 7.37	10	10.3	58.3	800
SMBG6.5	SMBJ6.5	6.5	7.22 - 8.82	10	12.3	48.7	500
SMBG6.5A	SMBJ6.5A	6.5	7.22 - 7.98	10	11.2	53.6	500
SMBG7.0	SMBJ7.0	7.0	7.78 - 9.51	10	13.3	45.1	200
SMBG7.0A	SMBJ7.0A	7.0	7.78 - 8.60	10	12.0	50.0	200
SMBG7.5	SMBJ7.5	7.5	8.33 - 10.2	1	14.3	42.0	100
SMBG7.5A	SMBJ7.5A	7.5	8.33 - 9.21	1	12.9	46.5	100
SMBG8.0	SMBJ8.0	8.0	8.89 - 10.9	1	15.0	40.0	50
SMBG8.0A	SMBJ8.0A	8.0	8.89 - 9.83	1	13.6	44.1	50
SMBG8.5	SMBJ8.5	8.5	9.44 - 11.5	1	15.9	37.7	10
SMBG8.5A	SMBJ8.5A	8.5	9.44 - 10.4	1	14.4	41.7	10
SMBG9.0	SMBJ9.0	9.0	10.0 - 12.2	1	16.9	35.5	5
SMBG9.0A	SMBJ9.0A	9.0	10.0 - 11.1	1	15.4	39.0	5
SMBG10	SMBJ10	10	11.1 - 13.6	1	18.8	31.9	5
SMBG10A	SMBJ10A	10	11.1 - 12.3	1	17.0	35.3	5
SMBG11	SMBJ11	11	12.2 - 14.9	1	20.1	29.9	5
SMBG11A	SMBJ11A	11	12.2 - 13.5	1	18.2	33.0	5
SMBG12	SMBJ12	12	13.3 - 16.3	1	22.0	27.3	5
SMBG12A	SMBJ12A	12	13.3 - 14.7	1	19.9	30.2	5
SMBG13	SMBJ13	13	14.4 - 17.6	1	23.8	25.2	5
SMBG13A	SMBJ13A	13	14.4 - 15.9	1	21.5	27.9	5
SMBG14	SMBJ14	14	15.6 - 19.1	1	25.8	23.3	5
SMBG14A	SMBJ14A	14	15.6 - 17.2	1	23.2	25.8	5
SMBG15	SMBJ15	15	16.7 - 20.4	1	26.9	22.3	5
SMBG15A	SMBJ15A	15	16.7 - 18.5	1	24.4	24.0	5
SMBG16	SMBJ16	16	17.8 - 21.8	1	28.8	20.8	5
SMBG16A	SMBJ16A	16	17.8 - 19.7	1	26.0	23.1	5
SMBG17	SMBJ17	17	18.9 - 23.1	1	30.5	19.7	5
SMBG17A	SMBJ17A	17	18.9 - 20.9	1	27.6	21.7	5
SMBG18	SMBJ18	18	20.0 - 24.4	1	32.2	18.6	5
SMBG18A	SMBJ18A	18	20.0 - 22.1	1	29.2	20.5	5
SMBG20	SMBJ20	20	22.2 - 27.1	1	35.8	16.7	5
SMBG20A	SMBJ20A	20	22.2 - 24.5	1	32.4	18.5	5
SMBG22	SMBJ22	22	24.4 - 29.8	1	39.4	15.2	5
SMBG22A	SMBJ22A	22	24.4 - 26.9	1	35.5	16.9	5
SMBG24	SMBJ24	24	26.7 - 32.6	1	43.0	14.0	5
SMBG24A	SMBJ24A	24	26.7 - 29.5	1	38.9	15.4	5
SMBG26	SMBJ26	26	28.9 - 35.3	1	46.6	12.4	5
SMBG26A	SMBJ26A	26	28.9 - 31.9	1	42.1	14.2	5
SMBG28	SMBJ28	28	31.1 - 38.0	1	50.0	12.0	5
SMBG28A	SMBJ28A	28	31.1 - 34.4	1	45.4	13.2	5
SMBG30	SMBJ30	30	33.3 - 40.7	1	53.5	11.2	5
SMBG30A	SMBJ30A	30	33.3 - 36.8	1	48.4	12.4	5
SMBG33	SMBJ33	33	36.7 - 44.9	1	59.0	10.2	5
SMBG33A	SMBJ33A	33	36.7 - 40.6	1	53.3	11.3	5
SMBG36	SMBJ36	36	40.0 - 48.9	1	64.3	9.3	5
SMBG36A	SMBJ36A	36	40.0 - 44.2	1	58.1	10.3	5
SMBG40	SMBJ40	40	44.4 - 54.3	1	71.4	8.4	5
SMBG40A	SMBJ40A	40	44.4 - 49.1	1	64.5	9.3	5
SMBG43	SMBJ43	43	47.8 - 58.4	1	76.7	7.8	5
SMBG43A	SMBJ43A	43	47.8 - 52.8	1	69.4	8.6	5
SMBG45	SMBJ45	45	50.0 - 61.1	1	80.3	7.5	5
SMBG45A	SMBJ45A	45	50.0 - 55.3	1	72.7	8.3	5
SMBG48	SMBJ48	48	53.3 - 65.1	1	85.5	7.0	5
SMBG48A	SMBJ48A	48	53.3 - 58.9	1	77.4	7.7	5
SMBG51	SMBJ51	51	56.7 - 69.3	1	91.1	6.6	5
SMBG51A	SMBJ51A	51	56.7 - 62.7	1	82.4	7.3	5
SMBG54	SMBJ54	54	60.0 - 73.3	1	96.3	6.2	5
SMBG54A	SMBJ54A	54	60.0 - 66.3	1	87.1	6.9	5
SMBG58	SMBJ58	58	64.4 - 78.7	1	103.0	5.8	5
SMBG58A	SMBJ58A	58	64.4 - 71.2	1	93.6	6.4	5
SMBG60	SMBJ60	60	66.7 - 81.5	1	107.0	5.6	5
SMBG60A	SMBJ60A	60	66.7 - 73.7	1	96.8	6.2	5
SMBG64	SMBJ64	64	71.1 - 86.9	1	114.0	5.3	5
SMBG64A	SMBJ64A	64	71.1 - 78.6	1	103.0	5.8	5

# SMB 5.0 thru 170 Volts

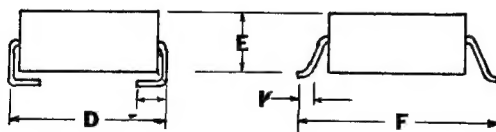
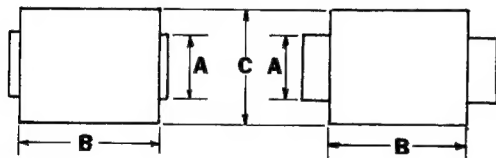
## ELECTRICAL CHARACTERISTICS @ 25°C

MICROSEMI CORP. PART NUMBER		REVERSE STAND-OFF VOLTAGE (See Note) $V_{WM}$ VOLTS	BREAKDOWN VOLTAGE $V_{(BR)}$ @ $I_T$ VOLTS		MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$ VOLTS	PEAK PULSE CURRENT (See Fig. 2) $I_{PP}$ AMPS	MAXIMUM REVERSE LEAKAGE @ $V_{WM}$ $I_D$ $\mu A$
GULL-WING LEAD	MODIFIED "J" BEND LEAD		MIN.	MAX.			
SMBG70	SMBJ70	70	77.8	95.1	125	4.8	5
SMBG70A	SMBJ70A	70	77.8	86.0	113	5.3	5
SMBG75	SMBJ75	75	83.3	102.0	134	4.5	5
SMBG75A	SMBJ75A	75	83.3	92.1	121	4.9	5
SMBG78	SMBJ78	78	86.7	106.0	139	4.3	5
SMBG78A	SMBJ78A	78	86.7	95.8	126	4.7	5
SMBG85	SMBJ85	85	94.4	115.0	151	3.9	5
SMBG85A	SMBJ85A	85	94.4	104.0	137	4.4	5
SMBG90	SMBJ90	90	100	122	160	3.8	5
SMBG90A	SMBJ90A	90	100	111	146	4.1	5
SMBG100	SMBJ100	100	111	136	179	3.4	5
SMBG100A	SMBJ100A	100	111	123	162	3.7	5
SMBG110	SMBJ110	110	122	149	196	3.0	5
SMBG110A	SMBJ110A	110	122	135	177	3.4	5
SMBG120	SMBJ120	120	133	163	214	2.8	5
SMBG120A	SMBJ120A	120	133	147	193	3.1	5
SMBG130	SMBJ130	130	144	176	231	2.6	5
SMBG130A	SMBJ130A	130	144	159	209	2.9	5
SMBG150	SMBJ150	150	167	204	268	2.2	5
SMBG150A	SMBJ150A	150	167	185	243	2.5	5
SMBG160	SMBJ160	160	178	218	287	2.1	5
SMBG160A	SMBJ160A	160	178	197	259	2.3	5
SMBG170	SMBJ170	170	189	231	304	2.0	5
SMBG170A	SMBJ170A	170	189	209	275	2.2	5

For Bidirectional indicate a C or CA suffix after the part number. (i.e.: SMBG170CA or SMBJ170C)

Microsemi Corp.'s SMB Series (600W) surface mountable packages are designed specifically for transient voltage suppression. The wide leads assure a large surface contact for good heat dissipation, and a low resistance path for surge current flow to ground. These high speed transient voltage suppressors can be used to effectively protect sensitive components such as integrated circuits and MOS devices.

## PACKAGE DIMENSIONS



DO-214AA

DO-215AA

### DIMENSIONS IN INCHES

	A	B	C	D	E	F	K	L
MIN.	.077	.160	.130	.205	.075	.235	.015	.030
MAX.	.083	.180	.155	.220	.095	.255	.030	.060
DIMENSIONS IN MILLIMETERS								
MIN.	1.96	4.06	3.30	5.21	1.90	5.97	0.381	0.760
MAX.	2.10	4.57	3.94	5.59	2.41	6.48	0.762	1.520

Typical Standoff Height: 0.004"-0.008" (0.1mm-0.2mm)

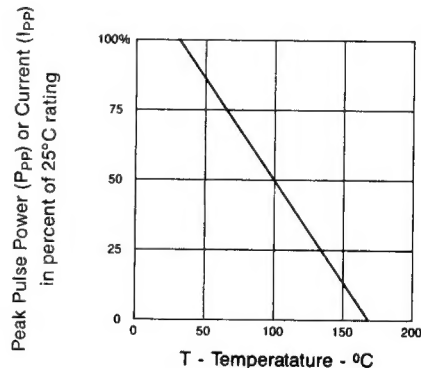


FIGURE 3 DERATING CURVE

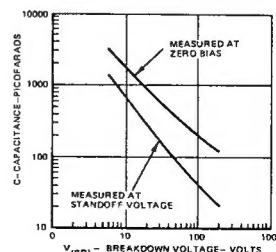


FIGURE 4  
TYPICAL CAPACITANCE VS.  
BREAKDOWN VOLTAGE